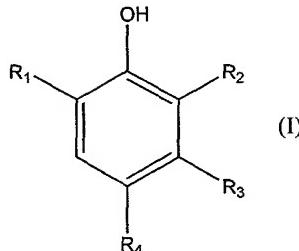


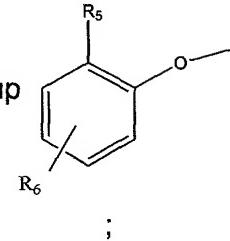
What is Claimed is:

## 1. The compound of Formula (I):



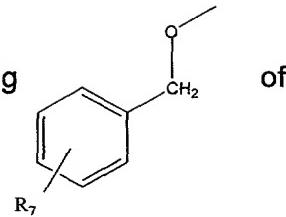
5

wherein

 $R_1$  is selected from the group

and

consisting



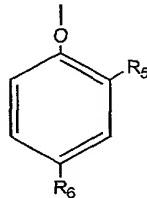
15  $R_2$  and  $R_3$  are each independently selected from the group consisting of hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group; a hydroxyalkyl group; a hydroxycycloalkyl group; an alkyl group substituted with phenyl in which phenyl is optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; phenyl optionally substituted with a member selected from 20 the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; and benzyl optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group;

25  $R_4$  is selected from the group consisting of hydrogen, an alkyl group, a cycloalkyl group, benzyl, and phenyl;

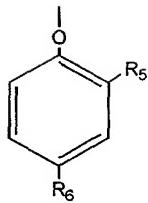
$R_5$  is selected from the group consisting of hydroxyl, benzyl, alkoxy, hydroxyalkyl, and cycloalkyl optionally substituted with hydroxyl; and

$R_6$  and  $R_7$  are each independently selected from the group consisting of  
 5 hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group; benzyl, an alkoxy group; phenyl optionally substituted with an alkyl group, a cycloalkyl group, an alkenyl group, a cycloalkenyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; an alkyl group substituted with phenyl in which phenyl is optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group;  
 10 phenoxy; and benzyloxy;

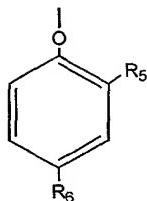
with the proviso that:



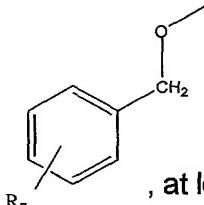
- 15 a) when  $R_1$  is a and  $R_2$  and  $R_4$  are each hydrogen, and  
 1) when  $R_3$  is hydrogen, then  $R_6$  is not hydrogen, methyl, tert-butyl, phenyl, or phenoxy;  
 2) when  $R_5$  is hydroxyl and one of  $R_3$  and  $R_6$  is hydrogen, then the other of  $R_3$  and  $R_6$  is not selected from the group consisting of hydrogen, n-propyl, n-butyl, n-pentyl, 1-methylethyl, 2-methylpropyl, 3-methylbutyl, benzyl, or cyclohexyl;  
 20 3) when  $R_3$  and  $R_6$  are each hydrogen, then  $R_5$  is not benzyl;  
 4) when  $R_5$  is hydroxyl and  $R_3$  is ethyl, then  $R_6$  is not methyl;  
 5) when  $R_5$  is hydroxyl and  $R_3$  is tert-butyl, then  $R_6$  is not tert-butyl;



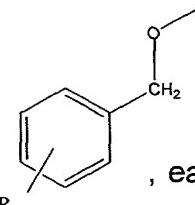
- b) when  $R_1$  is a ,  $R_3$ ,  $R_4$  and  $R_6$  are each hydrogen, and  $R_5$  is hydroxyl, then  $R_2$  is not selected from the group consisting of phenyl and tert-butyl;



- c) when  $R_1$  is a ,  $R_5$  is hydroxyl, and  $R_6$  is hydrogen, then none of  $R_2$ ,  $R_3$ , and  $R_4$  is C<sub>1</sub>-C<sub>4</sub> alkyl, the other two of  $R_2$ ,  $R_3$ , and  $R_4$  being hydrogen;



- d) when  $R_1$  is a , at least one of  $R_2$ ,  $R_3$  and  $R_4$  is not hydrogen, and



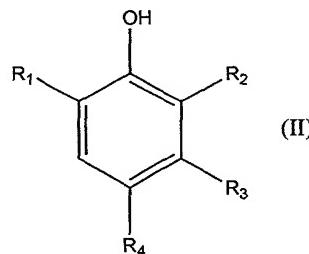
- e) when  $R_1$  is a , each of  $R_2$ , and  $R_3$  is hydrogen, and  $R_4$  is tert-butyl, then  $R_7$  is not hydrogen

2. The compound of claim 1 wherein each of  $R_3$ , and  $R_6$  are selected from the group consisting of straight and branched alkyl groups.

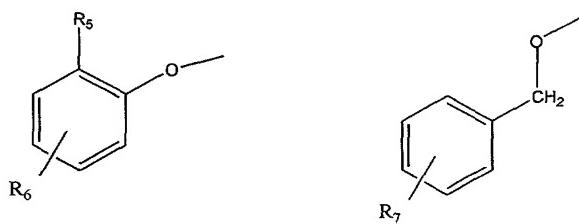
3. The compound of claim 1 wherein each of  $R_3$ ,  $R_5$ , and  $R_6$  is a cycloalkyl group.

4. The compound of claim 1 further including a member selected from the group consisting of 2-(2-hydroxyphenoxy)-5-heptylphenol, 2-(2-hydroxyphenoxy)-5-octylphenol, 2-but-2-enyl-6-(2-methoxyphenoxy)phenol, 2-(2-methoxyphenoxy)-6-butylphenol, 2-(2-hydroxyphenoxy),6-(3-hydroxypropyl)phenol, 6-(2-hydroxypropyl)-2-(2-methoxyphenoxy)phenol, 6-(3-hydroxypropyl)-2-(2-methoxyphenoxy)phenol, 6-(3-hydroxy-1-methylpropyl)-2-(2-hydroxyphenoxy)phenol, 6-(1-methyl-3-hydroxypropyl)-2-(2-methoxyphenoxy)phenol, 2-(2-hydroxyphenoxy)-6-(2-hydroxycyclohexyl)phenol, 2-(2-hydroxyphenoxy)-6-(3-hydroxycyclohexyl)phenol, 2-(2-methoxyphenoxy)-6-prop-2-enylphenol, 2-(2-methoxyphenoxy)-6-(1-methylprop-2-enyl)phenol, 2-(2-methoxyphenoxy)-6-propylphenol, 2-tert-butyl-6-phenylmethoxyphenol, 2-phenylmethoxy-4-cyclohexylphenol, 2-(2-hydroxy-4-tert-butylphenoxy)-6-propylphenol, 2-(2-hydroxyphenoxy)-5-cyclohexylmethylphenol, 2-(2-hydroxyphenoxy)-6-cyclohexylphenol.

5. An antimicrobial composition comprising an antimicrobial effective amount of at least one antimicrobial compound of Formula (II):



wherein



R<sub>1</sub> is selected from the group consisting of and

;

R<sub>2</sub> and R<sub>3</sub> are each independently selected from the group consisting of hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group;

- 5        a hydroxyalkyl group; a hydroxycycloalkyl group; an alkyl group substituted with phenyl in which phenyl is optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; phenyl optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; and benzyl optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group;
- 10

R<sub>4</sub> is selected from the group consisting of hydrogen, an alkyl group, a

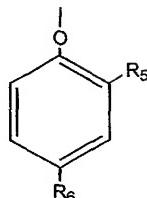
- 15        cycloalkyl group, benzyl, and phenyl;

R<sub>5</sub> is selected from the group consisting of hydroxyl, benzyl, alkoxy, hydroxyalkyl, and cycloalkyl optionally substituted with hydroxyl; and

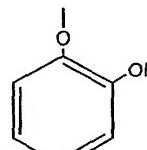
- 20        R<sub>6</sub> and R<sub>7</sub> are each independently selected from the group consisting of hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group; benzyl, an alkoxy group; phenyl optionally substituted with an alkyl group, a cycloalkyl group, an alkenyl group, a cycloalkenyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; an alkyl group substituted with phenyl in which phenyl is optionally substituted with a member selected from the group consisting of an alkyl
- 25

group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; phenoxy; and benzyloxy;

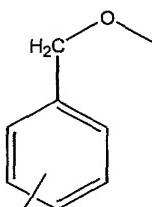
with the proviso that:



- 5        a)      when  $R_1$  is  , and  $R_2$  and  $R_4$  are each hydrogen, and
- 1)      when  $R_3$  is hydrogen, then  $R_6$  is not hydrogen or methyl;
  - 2)      when  $R_3$  is hydrogen and  $R_5$  is hydroxyl, then  $R_6$  is not hydrogen;
  - 3)      when  $R_3$  is tert-butyl and  $R_5$  is hydroxyl, then  $R_6$  is not 4-tert-butyl;



- 10       b)      when  $R_1$  is  , then none of  $R_2$ ,  $R_3$  and  $R_4$  is C<sub>1</sub>-C<sub>4</sub> alkyl, the other two of  $R_2$ ,  $R_3$  and  $R_4$  being hydrogen;

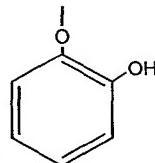


- c)      when  $R_1$  is a  , then each of  $R_2$ ,  $R_3$ ,  $R_4$  and  $R_7$  are not hydrogen;

and

an antimicrobial effective carrier.

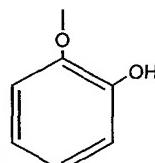
6. The antimicrobial composition of claim 5 wherein the antimicrobial effective carrier is selected from the group consisting of water, saline, alcohol, glycerin, propylene glycol, mineral oil, petrolatum, and mixtures thereof.



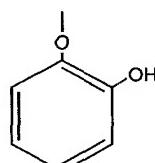
7. The antimicrobial composition of claim 5 wherein R<sub>1</sub> is , each  
5 of R<sub>3</sub> and R<sub>4</sub> are hydrogen, and R<sub>2</sub> is selected from the group consisting of alkyl,  
hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

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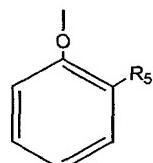
10 8. The antimicrobial composition of claim 5 wherein R<sub>1</sub> is , each  
of R<sub>2</sub> and R<sub>4</sub> are hydrogen, and R<sub>3</sub> is selected from the group consisting of alkyl,  
hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



15 9. The antimicrobial composition of claim 5 wherein R<sub>1</sub> is , each  
of R<sub>2</sub> and R<sub>3</sub> are hydrogen, and R<sub>4</sub> is selected from the group consisting of alkyl,  
hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



10. The antimicrobial composition of claim 5 wherein R<sub>1</sub> is , and  
R<sub>5</sub> is alkoxy.



11. The antimicrobial composition of claim 10 wherein each of R<sub>3</sub> and R<sub>4</sub> is hydrogen and R<sub>2</sub> is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

5

12. The antimicrobial composition of claim 10 wherein each of R<sub>2</sub> and R<sub>4</sub> is hydrogen and R<sub>3</sub> is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

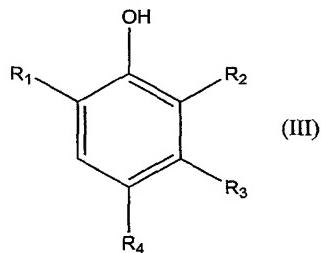
10        13. The antimicrobial composition of claim 10 wherein each of R<sub>2</sub> and R<sub>3</sub> is  
hydrogen and R<sub>4</sub> is selected from the group consisting of alkyl, hydroxyalkyl,  
cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

14. The antimicrobial composition of claim 5 wherein the antimicrobial effective amount is from about 0.0001 to 10% by weight of the total weight of the  
15 antimicrobial composition.

15. The antimicrobial composition of claim 14 wherein the antimicrobial effective amount is from about 0.001 to 5% by weight.

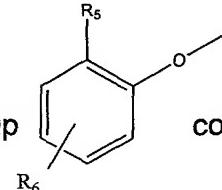
methoxyphenoxy)phenol, 6-(3-hydroxy-1-methylpropyl)-2-(2-hydroxyphenoxy)phenol,  
 6-(3-hydroxy-1-methylpropyl)-2-(2-methoxyphenoxy)phenol, 2-(2-hydroxyphenoxy)-6-  
 (2-hydroxycyclohexyl)phenol, 2-(2-hydroxyphenoxy)-6-(3-hydroxycyclohexyl)phenol,  
 2-(2-methoxyphenoxy)-6-prop-2-enylphenol, 2-(2-methoxyphenoxy)-6-(1-methylprop-  
 5 2-enyl)phenol, 2-(2-methoxyphenoxy)-6-propylphenol, 2-tert-butyl-6-  
 phenylmethoxyphenol, 2-(4-(1-methyl-1-ethylpropyl)-phenylmethoxy)phenol, 2-  
 phenylmethoxy-4-cyclohexylphenol, 2-(2-hydroxy-4-tert-butylphenoxy)-6-propylphenol,  
 2-(2-hydroxyphenoxy)-5-cyclohexylmethylphenol, 2-(2-hydroxyphenoxy)-6-  
 cyclohexylphenol, 2-(2-methoxyphenoxy)-6-but-2-enylphenol, 2-(2-methoxyphenoxy)-  
 10 5-phenylmethylphenol.

17. An oral composition comprising an antimicrobial effective amount of at least one antimicrobial compound of Formula (III):

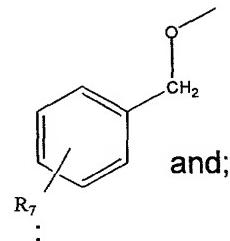


wherein

R<sub>1</sub> is selected from the group



consisting of



20

R<sub>2</sub> and R<sub>3</sub> are each independently selected from the group consisting of hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group; a hydroxyalkyl group; a hydroxycycloalkyl group; an alkyl group substituted with phenyl in which phenyl is optionally substituted with a member selected from the group 25 consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; phenyl optionally substituted with a member selected from

the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; and benzyl optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group;

5

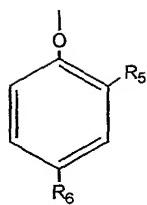
R<sub>4</sub> is selected from the group consisting of hydrogen, an alkyl group, a cycloalkyl group, benzyl, and phenyl;

R<sub>5</sub> is selected from the group consisting of hydroxyl, benzyl, alkoxy,  
10 hydroxyalkyl, and cycloalkyl optionally substituted with hydroxyl; and

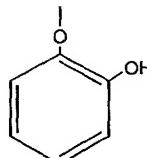
R<sub>6</sub> and R<sub>7</sub> are each independently selected from the group consisting of hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group; benzyl, an alkoxy group; phenyl optionally substituted with an alkyl group, a cycloalkyl  
15 group, an alkenyl group, a cycloalkenyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; an alkyl group substituted with phenyl in which phenyl is optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; phenoxy; and benzyloxy;

20

with the proviso that



a) when  $R_1$  is , then each of  $R_2, R_3, R_4$ , and  $R_6$  is not hydrogen; and



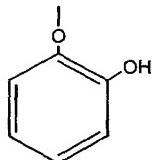
b) when  $R_1$  is , then none of  $R_2, R_3$  and  $R_4$  is C<sub>1</sub>-C<sub>4</sub> alkyl, the other two of  $R_2, R_3$  and  $R_4$  being hydrogen; and

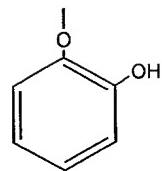
5 an orally acceptable carrier.

18. The oral composition of claim 17 wherein the orally acceptable carrier is selected from the group consisting of water, saline, alcohol, glycerin, propylene glycol and mixtures thereof.

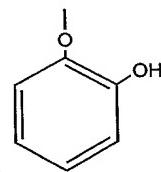
10 19. The oral composition of claim 17 wherein  $R_1$  is , each of  $R_3$

and  $R_4$  are hydrogen, and  $R_2$  is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

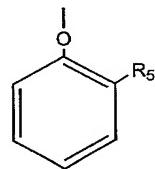




20. The oral composition of claim 17 wherein R<sub>1</sub> is , each of R<sub>2</sub> and R<sub>4</sub> are hydrogen, and R<sub>3</sub> is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



5 21. The oral composition of claim 17 wherein R<sub>1</sub> is , each of R<sub>2</sub> and R<sub>3</sub> are hydrogen, and R<sub>4</sub> is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



10 22. The oral composition of claim 17 wherein R<sub>1</sub> is , and R<sub>5</sub> is alkoxy.

15 23. The oral composition of claim 22 wherein each of R<sub>3</sub> and R<sub>4</sub> is hydrogen and R<sub>2</sub> is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

24. The oral composition of claim 22 wherein each of R<sub>2</sub> and R<sub>4</sub> is hydrogen and R<sub>3</sub> is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

25. The oral composition of claim 22 wherein each of R<sub>2</sub> and R<sub>3</sub> is hydrogen and R<sub>4</sub> is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

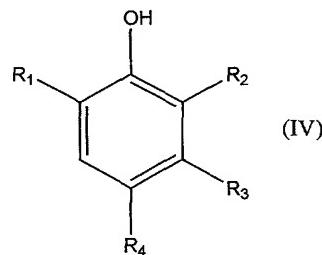
5

26. The oral composition of claim 17 wherein the antimicrobial effective amount is from about 0.0001 to 10% by weight of the total weight of the oral composition.

10

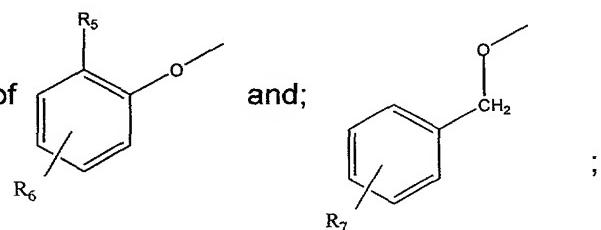
27. The oral composition of claim 26 wherein the antimicrobial effective amount is from about 0.001 to 5% by weight.

28. An oral composition comprising an antimicrobial effective amount of at least one antimicrobial compound of Formula (IV):



wherein

20 R<sub>1</sub> is selected from the group consisting of



25 R<sub>2</sub> and R<sub>3</sub> are each independently selected from the group consisting of hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group; a hydroxyalkyl group; a hydroxycycloalkyl group; an alkyl group substituted with phenyl

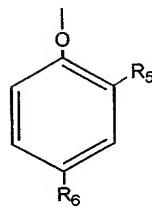
in which phenyl is optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; phenyl optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; and benzyl optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group;

R<sub>4</sub> is selected from the group consisting of hydrogen, an alkyl group, a cycloalkyl group, benzyl, and phenyl;

R<sub>5</sub> is selected from the group consisting of hydroxyl, benzyl, alkoxy, hydroxyalkyl, and cycloalkyl optionally substituted with hydroxyl; and

R<sub>6</sub> and R<sub>7</sub> are each independently selected from the group consisting of hydrogen; an alkyl group; a cycloalkyl group; an alkenyl group; a cycloalkenyl group; benzyl, an alkoxy group; phenyl optionally substituted with an alkyl group, a cycloalkyl group, an alkenyl group, a cycloalkenyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; an alkyl group substituted with phenyl in which phenyl is optionally substituted with a member selected from the group consisting of an alkyl group, a cycloalkyl group, a hydroxyalkyl group, and a hydroxycycloalkyl group; phenoxy; and benzyloxy;

with the proviso that



when  $R_1$  is , then each of  $R_2, R_3, R_4$ , and  $R_6$  is not hydrogen; and  
an orally acceptable carrier.

29. The oral composition of claim 28 further comprising at least one  
5 essential oil.

30. The oral composition of claim 29 wherein the essential oil is selected  
from the group consisting of thymol, menthol, eucalyptol, methyl salicylate, and  
combinations thereof.

10 31. The oral composition of claim 30, wherein the essential oil comprises:  
an amount of from about 0.005 to 0.5 % menthol;  
an amount of from about 0.005 to 0.5 % eucalyptol;  
an amount of from about 0.005 to 0.5 % methyl salicylate; and  
15 an amount of from about 0.005 to 0.5 % thymol.

32. The oral composition of claim 28 wherein the antimicrobial compounds  
of Formula (IV) are selected from the group consisting of 2-(2-Hydroxy-4-  
methylPhenoxy)-5-ethylPhenol, 2-(2-HydroxyPhenoxy)-5-heptylPhenol, 2-(2-  
20 HydroxyPhenoxy)-5-octylPhenol, 2-but-2-enyl-6-(2-methoxyphenoxy)phenol, 2-(2-  
methoxyphenoxy)-6-butylphenol, 2-(2-hydroxyphenoxy)-6-(3-hydroxypropyl)phenol, 6-  
(2-hydroxypropyl)-2-(2-methoxyphenoxy)phenol, 6-(3-hydroxypropyl)-2-(2-

methoxyphenoxy)phenol, 6-(3-hydroxy-1-methylpropyl)-2-(2-hydroxyphenoxy)phenol,  
6-(3-hydroxy-1-methylpropyl)-2-(2-methoxyphenoxy)phenol, 2-(2-hydroxyphenoxy)-6-  
(2-hydroxycyclohexyl)phenol, 2-(2-hydroxyphenoxy)-6-(3-hydroxycyclohexyl)phenol,  
2-(2-methoxyphenoxy)-6-prop-2-enylphenol, 2-(2-methoxyphenoxy)-6-(1-methylprop-  
5 2-enyl)phenol, 2-(2-methoxyphenoxy)-6-propylphenol, 2-tert-butyl-6-  
phenylmethoxyphenol, 2-(4-(1-methyl-1-ethylpropyl)-phenylmethoxy)phenol, 2-  
phenylmethoxy-4-cyclohexylphenol, 2-(2-hydroxy-4-tert-butylphenoxy)-6-propylphenol,  
2-(2-hydroxyphenoxy)-5-cyclohexylmethylphenol, 2-(2-hydroxyphenoxy)-6-  
10 cyclohexylphenol, 2-(2-methoxyphenoxy)-6-but-2-enylphenol, 2-(2-methoxyphenoxy)-  
5-phenylmethylphenol.

33. A method of reducing the presence of microorganisms on a substrate comprising treating the substrate with an effective amount of the antimicrobial composition of claim 5.

15 34. The method of claim 33 wherein the antimicrobial effective carrier is selected from the group consisting of water, saline, alcohol, glycerin, propylene glycol, mineral oil, petrolatum, and mixtures thereof.

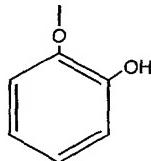
20 35. The method of claim 33 wherein the antimicrobial effective amount is from about 0.0001 to 10% by weight.

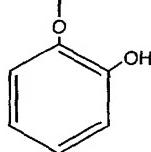
36. The method of claim 35 wherein the antimicrobial effective amount is from about 0.001 to 5% by weight.

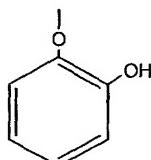
37. The method of claim 33 wherein the antimicrobial composition is in the form of a member selected from the group consisting of a deodorant, a soap, an ointment, and a cream.

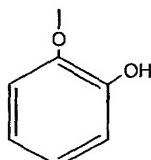
5       38. A method of reducing the presence of microorganisms in an oral cavity comprising administering into the oral cavity an effective amount of the oral composition of claim 17.

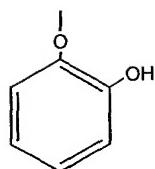
10      39. The method of claim 38 wherein the orally acceptable carrier is selected from the group consisting of water, saline, alcohol, glycerin, propylene glycol, and mixtures thereof.



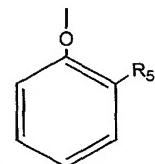
15      40. The method of claim 38 wherein R<sub>1</sub> is  , each of R<sub>3</sub> and R<sub>4</sub> are hydrogen, and R<sub>2</sub> is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



20      41. The method of claim 40 wherein R<sub>1</sub> is  , each of R<sub>2</sub> and R<sub>4</sub> are hydrogen, and R<sub>3</sub> is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



42. The method of claim 40 wherein R<sub>1</sub> is , each of R<sub>2</sub> and R<sub>3</sub> are hydrogen, and R<sub>4</sub> is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.



5 43. The method of claim 40 wherein R<sub>1</sub> is , and R<sub>5</sub> is alkoxy.

10 44. The method of claim 43 wherein each of R<sub>3</sub> and R<sub>4</sub> is hydrogen and R<sub>2</sub> is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

15 45. The method of claim 43 wherein each of R<sub>2</sub> and R<sub>4</sub> is hydrogen and R<sub>3</sub> is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

20 46. The method of claim 43 whereineach of R<sub>2</sub> and R<sub>3</sub> is hydrogen and R<sub>4</sub> is selected from the group consisting of alkyl, hydroxyalkyl, cycloalkyl, hydroxycycloalkyl, alkenyl, phenyl and benzyl.

47. The method of claim 38 wherein the effective amount is from about 20 0.0001 to 10% by weight.

48. The method of claim 47 wherein the effective amount is from about 0.001 to 5% by weight.

5        49. The method of claim 48 wherein the oral composition is in the form of a member selected from the group consisting of a mouthrinse, a dentifrice, a chewing gum, a lozenge, a dispersible oral film, and an oral film forming dentifrice.